INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer all the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do not write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 60.
- This document consists of 16 pages. Any blank pages are indicated.
Area of trapezium = $\frac{1}{2} (a + b)h$

Volume of prism = (area of cross-section) $\times$ length

PLEASE DO NOT WRITE ON THIS PAGE
This bar chart shows the number of times that copies of one maths textbook were borrowed from a group of libraries each year from 2001 to 2010.

(a) In which year was the book borrowed the most and how many times was this?

(a) In ______________ and it was borrowed ______________ times. [2]

(b) How many more times was it borrowed in 2008 than in 2004?

(b) ______________ [2]

(c) In 2011 it was borrowed 23 times.

Complete the chart by drawing the bar for 2011. [1]
2 This map shows part of Surrey.

(a) Arun comes out of Bentley Copse campsite and drives to the Post Office in Shere.

(i) In which compass direction does he drive?

(a)(i) ___________________________ [1]

(ii) The scale of the map is 2 cm represents 1 km.

About how far does Arun drive to the Post Office?

(ii) ___________________________ km [2]
(b) In the Post Office, Arun posts a parcel at a cost of £4.41 and he also buys 3 stamps at 58p each.

How much does he have to pay altogether?

(b) £ __________________________ [2]

(c) The distance from Shere to Guildford is 8 km.

What is this distance in miles?

(c) ____________________________ miles [1]

(d) In 2011, the population of Guildford was 100 383.

(i) Write 100 383 correct to the nearest hundred.

(d)(i) ____________________________ [1]

(ii) Write 100 383 correct to one significant figure.

(ii) ____________________________ [1]
Here are the first three patterns in a sequence.

<table>
<thead>
<tr>
<th>Pattern 1</th>
<th>Pattern 2</th>
<th>Pattern 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>o o o o o</td>
<td>o o o o o</td>
<td>o o o o o</td>
</tr>
<tr>
<td>o o o o o</td>
<td>o o o o o</td>
<td>o o o o o</td>
</tr>
<tr>
<td>o o o o o</td>
<td>o o o o o</td>
<td>o o o o o</td>
</tr>
</tbody>
</table>

(a) Complete the table.

<table>
<thead>
<tr>
<th>Pattern number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of squares</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of circles</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) How many circles are there in Pattern 10?
Explain how you decide.

Pattern 10 has _______ circles because __________________________________________
_____________________________________________________________________

[3]

[2]
4  (a) Here are the integers from 25 to 30.

\[
\begin{array}{cccccc}
25 & 26 & 27 & 28 & 29 & 30 \\
\end{array}
\]

(i) Which of these numbers is divisible by 7?

(a)(i) ________________________ [1]

(ii) Which of these numbers has 13 as a factor?

(ii) ________________________ [1]

(iii) Which of these numbers is prime?

(iii) ________________________ [1]

(b) Write down a multiple of 25 which is between 120 and 140.

(b) ________________________ [1]

(c) Work out.

(i) \(28^2 - 25 \times 30\)

(c)(i) ________________________ [1]

(ii) \(1 - \sqrt{25}\)

(ii) ________________________ [1]
This table can be used to plan a walk along the Norfolk Coast Path. It shows the times it takes to walk between some places along the path.

### Walking times

<table>
<thead>
<tr>
<th></th>
<th>Blakeney</th>
<th>Cley</th>
<th>Weybourne</th>
<th>Sheringham</th>
<th>Roman Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1h 01m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3h 27m</td>
<td></td>
<td>2h 26m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4h 38m</td>
<td></td>
<td>3h 37m</td>
<td>1h 11m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5h 53m</td>
<td></td>
<td>4h 52m</td>
<td>2h 26m</td>
<td>1h 15m</td>
<td></td>
</tr>
</tbody>
</table>

(a) (i) It takes 4 hours 38 minutes to walk from Blakeney to Sheringham.

How many minutes altogether are there in 4 hours 38 minutes?

(a)(i) ____________________ minutes [1]

(ii) The distance from Blakeney to Sheringham along the path is 11.6 miles. It takes 4 hours 38 minutes to walk from Blakeney to Sheringham.

How many minutes are you expected to take to walk one mile on this path? Give your answer correct to the nearest minute.

(ii) ____________________ minutes [2]
(b) Tim and Margaret start from Cley at 10 am.
They walk to Weybourne.
They stop at Weybourne to eat their packed lunch.
They then walk to Sheringham.

(i) Use the walking times to help you complete their plan for the day up to 'Arrive in Sheringham'.
Remember to allow them time for lunch.

Plan for the day

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leave Cley</td>
<td>10:00</td>
</tr>
<tr>
<td>Arrive in Weybourne</td>
<td></td>
</tr>
<tr>
<td>Leave Weybourne after a lunch stop</td>
<td></td>
</tr>
<tr>
<td>of _______ minutes</td>
<td></td>
</tr>
<tr>
<td>Arrive in Sheringham</td>
<td></td>
</tr>
<tr>
<td>Catch bus in Sheringham</td>
<td></td>
</tr>
<tr>
<td>Arrive in Cley</td>
<td></td>
</tr>
</tbody>
</table>

(ii) Tim and Margaret use the Coasthopper bus to return from Sheringham to Cley. Here is the timetable for buses after 2 pm.

<table>
<thead>
<tr>
<th></th>
<th>1425</th>
<th>1455</th>
<th>1525</th>
<th>1555</th>
<th>1625</th>
<th>1655</th>
<th>1755</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheringham</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weybourne</td>
<td>1433</td>
<td>1503</td>
<td>1533</td>
<td>1603</td>
<td>1633</td>
<td>1703</td>
<td>1802</td>
</tr>
<tr>
<td>Salthouse</td>
<td>1440</td>
<td>1510</td>
<td>1540</td>
<td>1610</td>
<td>1640</td>
<td>1710</td>
<td>1809</td>
</tr>
<tr>
<td>Cley</td>
<td>1446</td>
<td>1516</td>
<td>1546</td>
<td>1616</td>
<td>1646</td>
<td>1716</td>
<td>1814</td>
</tr>
<tr>
<td>Blakeney</td>
<td>1449</td>
<td>1619</td>
<td>1549</td>
<td>1619</td>
<td>1649</td>
<td>1719</td>
<td>1817</td>
</tr>
</tbody>
</table>

Decide on a suitable bus for them to return to Cley and complete the rest of the plan for the day.
6  (a) Write an expression for the total cost of 4 chocolate bars at \( c \) pence each.

(a) \[ \underline{\text{______________________}} \text{ pence} \] [1]

(b) Simplify fully.

(i) \( 5a \times 3b \)

(b)(i) \[ \underline{\text{____________________________}} \] [1]

(ii) \( 4a - 2b + a + 5b \)

(ii) \[ \underline{\text{____________________________}} \] [2]
(a) Here is a list of ingredients for a Chocolate Courgette Cake.

**Chocolate Courgette Cake**  
(serves 4 people)

- 200 g butter
- 300 g sugar
- 2 eggs
- 360 g plain flour
- 4 tablespoons cocoa
- 480 g grated courgettes

Debi wants to make a Chocolate Courgette Cake to serve 6 people.

Complete the list of ingredients she needs.

**Chocolate Courgette Cake**  
(serves 6 people)

- ______ g butter
- ______ g sugar
- ______ eggs
- ______ g plain flour
- ______ tablespoons cocoa
- ______ g grated courgettes

(b) Debi compares four Chocolate Courgette Cake recipes. The **mean** amount of courgettes they need is 435 g.

Three of the recipes need 450 g, 480 g and 340 g of courgettes.

What amount of courgettes does the fourth recipe need?

(b) ________________________ g

[3]
8 In part (a) of this question use a pair of compasses and a ruler. Do not rub out your construction lines.

Triangle ABC has sides AB = 10.8 cm, BC = 8.4 cm and AC = 4.3 cm.

(a) Construct triangle ABC.
   The side AB has been drawn for you.

(b) Measure angle B in the triangle.

(c) What type of angle is angle C in the triangle?
   Circle the correct answer.
   
   a right angle  reflex  acute  obtuse

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Maja and Charlie are playing a ‘think of a number’ game.

(a) Maja says:

I think of a number.
I add 4.
I multiply the result by 6.
The answer is 72.

Find the number that Maja thought of.

(b) Charlie says:

I think of a number.
I multiply it by 6.
I add 4 to the result.
The answer is 39 more than the number I first thought of.

(i) Let $n$ be the number that Charlie first thought of.

Complete this equation for Charlie's number game.

\[ \underline{\phantom{n+39}} = n + 39 \]  

(ii) Solve the equation to find the number that Charlie first thought of.

(b) (ii) \underline{\phantom{n+39}} [3]
Four people stand in an election to represent their class. Here are the number of votes they each obtain.

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jessie</td>
<td>5</td>
</tr>
<tr>
<td>Anton</td>
<td>10</td>
</tr>
<tr>
<td>Vivek</td>
<td>8</td>
</tr>
<tr>
<td>Silpa</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

Use the circle below to construct and label an accurate pie chart to represent these results.
Catherine is designing a new kitchen. She wants to find out whether the walls meet at an angle of 90°. She measures two walls and a diagonal across the kitchen floor. This diagram of the floor shows her measurements.

(a) Use the wall measurements to calculate what the length of the diagonal should be if angle A = 90°.

(b) Use your result for the length of the diagonal to decide whether angle A is equal to 90°, less than 90° or more than 90°. Show how you decide.

Angle A is ________________ 90° because ________________

______________________________________________________________________  

END OF QUESTION PAPER